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L30: Entry 5 of 6

File: USPT

Aug 3, 1993

US-PAT-NO: 5233169

DOCUMENT-IDENTIFIER: US 5233169 A

TITLE: Uniport interface for a bar code reading instrument

DATE-ISSUED: August 3, 1993

## INVENTOR-INFORMATION:

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APPL-NO: 07/ 785849 [PALM]

DATE FILED: October 31, 1991

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US-CL-ISSUED: 235/462; 235/472

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FIELD-OF-SEARCH: 235/462, 235/470, 235/472, 250/214R, 250/557, 250/566

PRIOR-ART-DISCLOSED:

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ART-UNIT: 259

PRIMARY-EXAMINER: Shepperd; John

ASSISTANT-EXAMINER: Shami; K.

## ABSTRACT:

An optical bar code reading instrument has a uniport interface circuit which accepts

through a common terminal both charging current for the reader's internal rechargeable battery and incoming digital electric information signals. The uniport interface also allows digital electrical signals produced by the instrument to pass through the same terminal.

26 Claims, 5 Drawing figures



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L30: Entry 5 of 6

File: USPT

Aug 3, 1993

DOCUMENT-IDENTIFIER: US 5233169 A

TITLE: Uniport interface for a bar code reading instrument

Abstract Text (1):

An optical bar code reading instrument has a uniport interface circuit which accepts through a common terminal both charging current for the reader's internal rechargeable battery and incoming digital electric information signals. The uniport interface also allows digital electrical signals produced by the instrument to pass through the same terminal.

Brief Summary Text (3):

In order to accommodate the input and output of various electrical signals, bar code readers customarily employ a multiplicity of jacks. Each provides for a different jack or connector which provides a receptacle for a plug from a different Input/Output ("I/O") device, such as computers, displays, printers and even other bar code readers. A separate jack and plug is used for a battery charger when the reader is portable and uses a rechargeable battery. A multiplicity of ports present several problems. First, a relatively large amount of space is needed to accommodate all of the jacks, necessarily resulting in larger bar code readers--an undesirable condition for hand-held instruments. Second, separate connecting cables and plugs are needed to carry each signal, which makes the use of a hand-held reader cumbersome. Third, each of a plurality of jacks provides an entrance for the introduction of dirt and other foreign objects into the interior of the reader. To reduce the number of jacks, it has been proposed to provide switches which multiplex the reader to the I/O devices and the battery charger. Circuits for controlling the switches increase the complexity and cost of the bar code reader.

Brief Summary Text (4):

It is the object of this invention to provide connections between an instrument, especially a portable bar code reader or the like, which enables all such connections to be made via a single terminal, as may be provided by a jack.

## CLAIMS:

1. In an optical bar code reader in which first digital electrical information signals are generated and which is responsive to second digital electrical information signals generated by a source external of said reader, said reader having an internal battery and an input-output terminal for connecting a source of voltage for charging said battery, the improvement comprising an interface circuit connected to said terminal, said interface circuit including output means for applying said first signals as output signals to said input-output terminal, means connected to said terminal for passing current of sufficient magnitude to charge said battery, and input means operative upon said second digital electrical information signals when said source is connected to said input-output terminal for applying said second digital electrical signals to said reader.
5. The improvement according to claim 1 wherein said input-output terminal comprises a jack having a receptacle for receiving a plug, said jack having dual contacts and a switch operated by said plug, one of said dual contacts being connected to ground, said switch being in an open state when said jack is in receipt of said plug and in a closed state when said jack is not in receipt of said plug, said reader having a memory, and means for applying said first signals to said memory when said switch is in a closed state.
6. The improvement according to claim 1 wherein said charging current passing means

comprises a first unidirectionally conductive device connected between the input-output terminal and said battery to prevent discharge current from flowing from said battery to said input-output terminal, said input means comprises a DC reference voltage and a second unidirectionally conductive device connected between said reference voltage and said input-output terminal, with said second signals being applied to said reader from a point between said reference voltage and said second conductive device, said output means comprises a logic device having means for inverting electrical signals, said logic device having an input and an output, and a transistor with means responsive to said first signals for operation thereof in a pull-down mode, said transistor being connected between said logic device and said input-output terminal with said first signals being applied at the input of said logic device, and wherein said input-output terminal comprises a jack having a receptacle for receiving a plug, said jack having dual contacts and a switch operated by said plug, one of said dual contacts being connected to ground and the other of said contacts being connected to said first unidirectionally conductive device, said switch being in an open state when said jack is in receipt of said plug and in a closed state when said jack is not in receipt of said plug, said reader having a memory, and means for applying said first signals to said memory when said switch is in a closed state.

11. In a bar code reader system having a reader with an internal battery and a single terminal for connecting a source of voltage for charging said battery and for sending first electrical data signals as output signals from said reader and receiving second electrical data signals as input to said reader, said reader having a jack with dual contacts, the improvement comprising an adapter for use as an interface between said reader and an external input-output device, said adapter including output means for applying said first signals from said reader as output signals to said input-output device, input means for applying said second signals from said input-output device as input signals to said reader, and a dual contact plug receivable in said terminal, one contact being common, the other contact being connected to said input and output means.

18. In a bar code reader system having a reader with an internal battery and a single terminal for connecting a source of voltage for charging said battery and for sending first electrical data signals as output signals to an input-output device, said first signals being generated in said reader, and receiving second electrical data signals as input from said reader, said second signals being generated in said input-output device, said reader having a jack with dual contacts, the improvement comprising an adapter for use as an interface between said reader and both said voltage source and an external input-output device, said adapter including means for passing current of sufficient magnitude to charge said battery, output means for applying said first signals as output signals to said input-output device, input means in which said second signals are generated in said input-output device for applying said second signals to said reader, and a plug to be received in said terminal.



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L30: Entry 4 of 6

File: USPT

Apr 25, 1995

DOCUMENT-IDENTIFIER: US 5410141 A

TITLE: Hand-held data capture system with interchangeable modules

Abstract Text (1):

The disclosure relates to battery powered hand-held data entry terminals wherein a peripheral module may contain an automatically operating full image reader and a wireless communication unit. The reader reads at least one full line of indicia and may comprise a laser bar code scanner or a flash type image reader. Preferably the reader has uniform resolution in orthogonal directions in the field of view so that an area image can be read at any arbitrary angular orientation and re-oriented as a stored digital image to a normalized orientation before decoding. The user interface may lie in a first longitudinally extended layer and the peripheral module may lie in a second longitudinally extended adjoining layer. In normal reading disposition of the automatic reader, the user interface may be close to its normal orientation for user interaction therewith to provide for smooth transitions between reading and user interaction operations. A hand grip portion preferably underlies the user interface for comfortable support thereof during manual actuations. The peripheral module and hand grip portion may be used entirely separately from the user interface and may have a wireless link with the user interface. The user interface may comprise a digitizer/display with resolution for accurately digitizing and displaying a person's signature. Signatures may also be digitized via an optical full image reader for immediate verification.

Brief Summary Text (8):

It is highly desirable that the data capture system be compatible with existing peripheral equipment e.g. for downloading data to the terminal and ~~where applicable recharging the terminal batteries~~. In a particularly advantageous embodiment a basic terminal unit has one end with external contacts compatible with existing communicating and recharging docking apparatus and an opposite end adapted to selectively receive various modular adaptor end caps. Besides a compatibility end cap providing standard overall dimensions and a standard electrical connector arrangement compatible with an existing printer docking receptacle, the terminal may be coupled with an automatic bar code scanner or other desired peripheral device. The basic terminal may receive an RF module adapting the terminal for on-line RF communications.

## CLAIMS:

71. In a data capture system according to claim 66, said data terminal being of configuration so as to be palm supported with one hand, said data terminal having manually actuated triggers at opposite lateral sides thereof such that said bar code scanner module means is readily triggered to effect a bar code scanning operation by either a right or left hand of the user the palm of whom is disposed in supporting relation to said data terminal.

83. In a data capture system, a hand-held portable data terminal of a size and weight to be held in only one hand of a user, said data terminal comprising:

a) first and second modules, each of said first and second modules comprising opposing front and rear sides;

b) user interface means disposed at said front side of said first module for permitting the user to interact with said data terminal, whereby said first module has a balance when held by itself done by the user;

c) bar code scanner means for directing radiation on and reading reflected radiation from a complete code symbol without movement of the code symbol and said scanner means; and

d) said second module constructed to receive said scanner means and being selectively disposed in a separated state and a connected state wherein said rear side of said first module is connected to said front side of said second module in a manner to maintain said balance of said first module.

98. In a data capture system according to claim 91, wherein said data terminal has manually actuated triggers disposed at opposite lateral sides of said hand grip portion such that said bar code scanner module means is readily triggered to effect the code scanning operation by either a right or left hand of the user, the palm of which is disposed in supporting relation to said data terminal.

99. In a data capture system according to claim 91, wherein when said data terminal is supported in said normal user operating orientation, said user interface means lies in a horizontal plane and is directed upwardly for convenient user interaction and said scanner means is simultaneously directed generally forwardly and downwardly; said hand grip portion being arranged so that when said data terminal is disposed in its normal user operating orientation said bar code scanner means is simultaneously oriented to effect a reading of said bar code symbol.

119. In a data capture system according to claim 118, wherein there is included means for connecting said portable supply means to energize said code reader module.

120. In a data capture system according to claim 118, wherein there is included releasable means for connecting said portable supply means to energize said code reader module.

123. In a data capture system of claim 121, wherein said augmented means comprises bar code scanning means for directing radiation on and reading reflected radiation from a bar code symbol.

124. In a data capture system of claim 123, wherein said housing comprises a hand grip portion disposed to be gripped manually by the operator in a normal position, wherein said data entry means is disposed upwardly to be readily viewed by the operator and said augmented module is disposed so that said bar code reader is oriented to read a bar code disposed remotely from the operator.



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L30: Entry 1 of 6

File: USPT

May 25, 1999

DOCUMENT-IDENTIFIER: US 5907147 A

TITLE: Non-contact actuated trigger apparatus for bar code laser scanner

Abstract Text (1):

The system, which is especially suitable for use as a bar code scanner trigger which allows for hands-free scanner operation and non-contact triggering of the scanner by the operator, in one embodiment, comprises a switch and a switch actuator, with the switch mounted proximate to a movable part of the body, and the switch actuator located on the movable part of the body, which part is movable so as to move the switch actuator and switch to within a predetermined proximity of one another and thereby actuate the switch, which will actuate the electronic equipment switched thereby. After the switch has been actuated, moving the part of the body with the switch actuator thereon so as to move the switch actuator and switch beyond a predetermined proximity of one another will deactivate the switch, and thereby deactivate the electronic equipment switched thereby. In an exemplary embodiment, the switch actuator is disposed upon a finger via a switch actuator mount in the form of a glove, and the switch is disposed upon the back of the hand at a point proximate to the finger so that extending a finger as in a pointing motion actuates the switch, thereby activating the equipment and further so that retracting the finger deactuates the switch. In other embodiments multiple switches and switch actuators may be used in conjunction with multiple fingers or digits, and/or with predetermined patterns or combinations of switch actuations required to activate the electronic equipment.

Brief Summary Text (5):

Operating electronic hardware typically requires some sort of manual contact with a switch or other actuation means. For portable hardware, it is desirable to provide a switch which may be operated by a slight articulation of the hand, so that the hand remains largely free for other tasks, such as grasping objects, etc. It is also desirable to provide a switch which prevents operator fatigue by requiring very little force to actuate. Such use of portable hardware involves the use of a laser bar code scanner in a warehouse, when an operator of a scanner may wish to carry or wear a portable scanner.

## CLAIMS:

1. A system for initiating a function of a bar code scanner, said system comprising:

a magnetically-operated switch, electrically connected to said bar code scanner, for initiating said function of the bar code scanner, when actuated; and

a switch actuator;

said switch being actuated and said function being initiated when said switch and said switch actuator are brought within a predetermined proximity to each other without making contact.

5. The system as claimed in claim 1 further comprising means for integrally mounting said switch with said bar code scanner.

7. A bar code scanner having various functions, comprising:

a magnetically-operated switch, integrally mounted in said bar code scanner, for initiating one of said functions of the bar code scanner when actuated; and

a switch actuator;

said switch being actuated and said one function being initiated when said switch and said switch actuator are brought within a predetermined proximity to each other without making contact.

8. The bar code scanner as claimed in claim 7 wherein said switch actuator comprises a magnet.

9. The bar code scanner as claimed in claim 7 wherein said switch actuator comprises a magnetic field generator.

10. The bar code scanner as claimed in claim 9 wherein said switch is selected from the group consisting of a magnetic reed switch and a Hall-effect switch.

11. The bar code scanner as claimed in claim 7, wherein said one function comprises a trigger function for activating the bar code scanner.

12. The bar code scanner as claimed in claim 7, further comprising a glove, worn on the hand and having receptacles for fingers, for carrying said switch and said switch actuator.

13. The bar code scanner as claimed in claim 12, wherein said switch is disposed on a back side of said glove and said switch actuator disposed on a receptacles for one of said fingers.

14. The bar code scanner as claimed in claim 13, wherein said one function is initiated when said one finger is in a raised, straight position.

15. The bar code scanner as claimed in claim 13, wherein said one function is not initiated when said one finger is in a relaxed, curled position.



## End of Result Set



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L32: Entry 3 of 3

File: USPT

Dec 3, 1996

DOCUMENT-IDENTIFIER: US 5581707 A

TITLE: System for wireless collection of data from a plurality of remote data collection units such as portable bar code readers

Abstract Text (1):

In order to collect data messages at a base station which is in radio communications with portable data collection terminals, such as bar code readers, that may move between different locations, all remote from the base station, a set of successive polling messages are broadcast from the base station addressed to different individual remote units during successive polling cycles. Increases in speed of polling cycles are obtained by eliminating from the polling cycle messages addressed to remote units which are turned off, or are inactive for a time since the unit recently sent data to the base station. During the last polling cycle in a set, the base station transmits acknowledgment of the collection of valid data to all of the units which have transmitted data. The time required for data collection depends upon the activity of the units and complex error and collision avoidance codes are not required. The system is also adapted for use with polarization diversity radio transmission whereby the one of a pair of antennas disposed at the base station in polarization diversity relationship (orthogonal to each other) can be selected for transmission for each units next poll depending upon which of the antennas received the strongest poll response signal from that unit on the previous cycle of polling signals.

## CLAIMS:

4. The system according to claim 3, wherein said units are remote portable bar code scanner readers having a means for reading bar codes and transmitting data representing said bar codes, to said base station, in the form of said data messages.

13. A method of collecting data messages at a base station from a plurality of remote portable bar code scanner units which comprises steps of:

individually polling, at a certain rate, certain of said individual remote portable bar code scanner units on each of a plurality of successive polling cycles, wherein each cycle has a duration, and

receiving poll response messages from certain of said individual remote portable bar code scanner units after each is polled, said poll response messages representing that the certain of said individual remote portable bar code scanner units have data messages which are available for transmission to said base station, and

changing the rate of polling and changing the duration of said cycles depending upon the poll response messages received from said remote portable bar code scanner units.

14. The method according to claim 13 further comprising the step of:

rendering those of said remote portable bar code scanner units which have communicated data messages inactive for a certain number of said plurality of successive cycles occurring after the cycle during which said certain of said individual remote portable bar code scanner units have communicated said data messages to said base station.

15. The method according to claim 14 further comprising the step of

rendering those of said remote portable bar code scanner units inactive from which poll response messages have not been received at said base station for a certain number of said successive polling cycles.

16. The method according to claim 13, wherein said changing step is carried out to decrease the rate at which certain of said individual remote portable bar code scanner units are polled by said base station, during one of said cycles during which said data messages are collected at said base station, by increasing the interval between successive poll messages addressed to certain individual remote portable bar code scanner units when a poll response message from one of said certain of said individual remote portable bar code scanner units which is polled represents that said remote portable bar code scanner unit has a data message ready for collection by said base station.

17. The method according to claim 13 wherein said changing step is carried out to increase the rate at which said certain of said remote portable bar code scanner units are polled by said base station by replacing poll messages addressed to those of said remote portable bar code scanner units which are inactive with poll messages addressed to those of said remote portable bar code scanner units which are active.

31. The system according to claim 25 wherein said portable data collection units are bar code readers and include a means for reading bar codes and a means for transmitting data representing said bar codes in the form of said data messages.

39. The system according to claim 32 wherein said portable data collection units are bar code readers having means for reading bar codes and transmitting data representing said bar codes, to said base station, in the form of said data messages.

44. The method according to claim 40 wherein said broadcasting step (a) includes broadcasting from said base station a first plurality of successive poll messages in a sequence, wherein each individual poll message is addressed to a different individual remote bar code scanner unit.

45. A bar code data acquisition system comprising:

a plurality of remote portable bar code scanner units, each unit having wireless transmission and receiving communications capability; and

a base station having wireless transmission and receiving communications capability for communication with said plurality of remote portable bar code scanner units, said base station includes a pair of antennas in polarization diversity relationship to one another, and a pair of receiving channels wherein one receiving channel connects to one of said pair of antennas and the other receiving channel connects to the other of said pair of antennas;

wherein said base station connects one of said pair of antennas to transmit to said remote portable bar code scanner units.

46. The bar code data acquisition system according to claim 43, further comprising a means for identifying which one of said pair of antennas received a signal transmitted from said portable remote bar code scanner units strongest, and selecting said antenna and corresponding channel for subsequent transmission and receiving communications between said base station and said portable remote bar code scanner unit.

## End of Result Set



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L40: Entry 1 of 1

File: USPT

Nov 9, 1999

US-PAT-NO: 5979757

DOCUMENT-IDENTIFIER: US 5979757 A

TITLE: Method and system for presenting item information using a portable data terminal

DATE-ISSUED: November 9, 1999

## INVENTOR-INFORMATION:

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Murrah; Judith	St. James	NY		
Riso; Francis	Setauket	NY		
Beach; Robert	Los Altos	CA		
Sandler; Robert	Holtsville	NY		
Klein; John	Morgan Hill	CA		

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NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Symbol Technologies, Inc.	Holtsville	NY			02

APPL-NO: 08/ 771463 [PALM]

DATE FILED: December 20, 1996

## PARENT-CASE:

RELATED APPLICATIONS This application is a continuation-in-part of U.S. patent application Ser. No. 08/706,579 entitled "DEVICE AND METHOD FOR SECURE DATA UPDATES IN A SELF-CHECKOUT SYSTEM" filed on Sep. 5, 1996, currently pending, and is related to pending United States patent application entitled "INTRANET SCANNING TERMINAL SYSTEM" filed on Dec. 20, 1996.

INT-CL: [06] G06 K 7/10

US-CL-ISSUED: 235/383; 235/472.01, 235/385, 705/27, 186/56

US-CL-CURRENT: 235/383; 186/56, 235/385, 235/472.01, 705/27

FIELD-OF-SEARCH: 235/383, 235/472, 235/385, 235/472.01, 705/708, 705/410, 705/16, 705/27, 705/26, 186/52, 186/56, 186/61

PRIOR-ART-DISCLOSED:

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ART-UNIT: 286

PRIMARY-EXAMINER: Hajec; Donald

ASSISTANT-EXAMINER: Rodriguez; Douglas X.

ABSTRACT:

The present invention relates to an improved portable shopping system. The system is provided with improved data presentation system for presenting customer desired data on a portable terminal. The portable terminal includes audio as well as video presentation means which are used to provide customer specific marketing files to promote the sale of identified items.

16 Claims, 14 Drawing figures